

## APPENDIX 6

### HERBICIDE USE, POTENTIAL SOURCES OF DATA FOR THE CAMPBELL CREEK PILOT PROJECT

The subject of herbicide use was mentioned in one of the webinars presented and prompted further examination of the subject. Because no suggestion as to how herbicide information would be useful for restoration was provided this examination focused primarily on Critical Questions 5 and 6:

“Are there gaps in the types or quality of information available on a Planning Watershed scale that would be useful for THP/NTMP preparation and review and for the assessment of CWEs?”

“If there are gaps, what additional information is needed and what data are available?”

- For THP/NTMP preparation herbicide information may be useful for cumulative impact assessment. When a THP proposes use of herbicides or discloses that there is potential for herbicides to be used (primarily for reforestation) then THP Section IV, the cumulative impacts analysis/assessment, discusses the potential for impacts if herbicide use should occur. Herbicide data from an outside source would be more useful in watersheds with small landowners than it was in the Campbell Creek Watershed. Lyme Redwoods Timberlands, LCC, as the owner of the bulk of the Campbell Creek Planning Watershed and having the records of the previous owners of the property, knows where and what herbicides have been applied in the past.
- For restoration opportunities, herbicide information could be useful to Native American groups interested in plant species used for basket weaving and other uses specific to tribal customs, species of cultural value. The concern may be two-fold, a concern for exposure of persons using materials gathered from a forested setting, and change in the abundance of plant specific species due to the use of herbicides.
- Herbicide use information might be a consideration associated with potential impacts on fisheries, if products used have the potential to migrate to streams, are used in substantial volumes, or are applied repeatedly in an area with access to streamflow. These situations would be more of an issue in watersheds with land uses such as golf courses, row crops, etc. than where forest management is the primary land use.

Herbicide use has been minimal in the Campbell Creek Planning Watershed and herbicide effects are short term, so examining THPs/NTMPs beyond the most current years would not be productive.

The most recent THP in the Campbell Creek Planning Watershed (THP 1-15-107 MEN) serves as a template to show what herbicide information may be available. Beginning with THP Section II, item 14 (Silviculture); Item 14 has several parts, labeled (a)-(j) in recent THPs. (“Group A” species are primarily commercial conifers, “Group B” species are less commercial conifers and hardwoods – the species in both Groups are listed in the Forest Practice Rules definitions, code section 14 CCR 895.1 “Commercial Species.”)

1. Item 14(f) asks the question: “Are group B species proposed for management?” This a common trigger for herbicide use – the need to treat tanoak to secure adequate regeneration of conifers.
2. Item 14(f) also asks: “Will group B species need to be reduced to maintain relative site occupancy of A species?” If this question is marked “Yes” a discussion of how the group B

species are proposed to be treated should follow. For example, from THP 1-15-107 MEN: “The plan submitter will conduct additional follow-up measures, as needed, with manual (chainsaw) or herbicide treatment to maintain relative site occupancy of Group A species. A PCA [Pest Control Advisor] will be involved with any herbicide treatment.” A statement disclosing potential for herbicide use triggers a general discussion of herbicides in THP Section IV (Cumulative Impact Assessment). Note: the site-specific needs regarding treatment usually don’t become clear until after harvest has taken place, often after trees have been planted. In some parts of the state (i.e., the Sierras) grass, forb and brush species make herbicide use more likely when openings are created. Those THPs might provide different information than THPs on the coast where tanoak is the primary species treated with herbicides, also regeneration in redwoods is primarily by stump sprouting as opposed to planting seedling trees.

3. Item 14(i) asks the question: “Will site preparation be used within the logging area?” There may or may not be mention of herbicides here. In THP 1-15-107 MEN there was not.

In THP Section IV (Cumulative Impact Assessment) the discussion of herbicide use is often quite detailed when there is potential for herbicide use. The applicable portions of the discussion in THP 1-15-107 MEN begin with a general summary of the potential for chemical contamination, followed by details regarding hardwood treatment (“CWE” is “Cumulative Watershed Effects”, “CG” is Campbell Group and “HTC” is “Hawthorne Timber Company” – CG and HTC owned the property at the time the THP was prepared):

**“Chemical Contamination Effects:**

Potential sources of chemical CWEs include run off from roads treated with oil or other dust retarding materials, direct application or run off from pesticide and herbicide treatments, contamination by equipment fuels and oils, and the introduction of nutrients released during slash burning or wildfire(s).

The proposed operation will not likely produce run off from oil or other dust-retarding materials. Landings associated with the proposed harvest operation are located well away from watercourses, minimizing the possibility of accidental discharges. Pesticide and herbicide application and treatment is regulated by the State of California in order to minimize the potential for adverse impacts associated with the use of these chemicals.

Fertilizer and pesticide use for legal and illegal horticultural activities may be in use in the headwaters of the Ten Mile River drainage. However, if such contaminants are being introduced, the quantity is apparently low enough that significant effects are not noted downstream on HTC ownership. ...

The KRIS database indicates that chemical inputs from pesticide and herbicide application, in particular contamination from diesel mixed with these chemical agents, are a concern. CG’s Silvicultural forester has been consulted regarding the use of diesel with these agents and indicated that none of the applications we use incorporate diesel in the mix.

**Hardwood Treatment:**

The Plan Submitter may choose to induce mortality of hardwoods, primarily tanoak, with herbicides. This activity occurred in the past as noted in many of the THPs included in this assessment. As hardwood treatment is prescribed in this THP, it is reasonable to assume that such use will occur in the reasonable future (for clearcut units, within 5 years of completion). Chemical agents utilized have included and will likely continue to be glyphosate, imazapyr, and triclopyr. While the primary target species is tanoak, other species have also been targeted such as, manzanita, Scotch/French broom, and pampas grass. General methods of application vary depending upon the size of the target crop, with lower level crops (brush)

receiving a foliar application while larger stems are typically treated utilizing "hack and squirt", which is a stem injection method. ...

A potential risk is that chemicals may enter waterways affecting aquatic life. To reduce this risk, labeling requirements prohibit mixing of chemicals in locations where spillage may enter waterways. For chemicals applied to forest species, labeling requirements prohibit the application of such chemicals to waterways. Treatment within a WLPZ is prohibited as specified in the THP. ...

The potential risk that chemical build up in soil, both short and long term, is much lower in forest applications where chemicals are usually applied only once in the life of a stand (once every 50 to 100 years). Further, the chemicals commonly used in forested landscapes have short half-lives and are readily broken down in the environment.

Additional mitigations over and above those outlined below to reduce impacts to 'less than significant' are not deemed necessary, as no significant impact has been identified which warrants mitigation. ...

Herbicide treatment is preferable to cutting hardwoods for several reasons: ...

- Herbicide use is conducted mainly once in the life of a stand, 50 to 100 year intervals, which will reduce risk of long term effects.
- The quantities of direct application used varies but usually less than 12 ounces per acre is used, and is applied directly to the targeted vegetation.
- Foliar application rates may range from 16 to 64 ounces per acre depending upon the chemical used; however, foliar applications constitute less than 15% of the total areas treated for this ownership.
- Herbicide treatment is preferable to other site preparation treatments due to the lack of ground disturbance associated with ground based equipment use or potential peak flow and air quality impacts associated with burning."

There were no current NTMPs in the Campbell Creek Planning Watershed. However, there was some herbicide information in the discussion of Reforestation and Timber Stand Improvement and in the the Cumulative Impacts Assessment of 1-96NTMP-008 MEN (pages 38 and 72 respectively):

"Conifer Release:

Planted seedlings shall be monitored for the first 10 years after planting to determine if competing vegetation is limiting crop tree growth. Swordfern, blackberries, salal and tanoak are expected to be the most vigorous competing species.

Spot application of herbicides to competing vegetation around crop trees may be used. If the landowner applies herbicides, consultation with a licensed pesticide applicator is recommended to determine which herbicide is effective for specific vegetation, and what precautions should be taken to protect the applicator and the environment from spills and exposure. Herbicide applicators other than the landowner must be licensed pesticide applicators. No pesticides shall be used within the WLPZ of Class I and Class II Watercourses. Cutting competing vegetation with a machete or chainsaws may also be appropriate, although species such as tanoak will sprout back, and repeated cuttings may be necessary."

"Chemical Contamination Effects

No pesticides will be used in this operation within the WLPZ, and the minimal use of WLPZ facilities will reduce the threat from chemical contamination during operations. Trucks and equipment will be fueled away from watercourses. Landings where servicing of equipment occurs are located away from watercourses."

The other NTMP in the Campbell Creek Planning Watershed, 1-94NTMP-002 MEN stated (page 23):

“When tanoak is removed prior to planting, excessive stump sprouting may require chemical control, or by chainsaw cutting of the re-sprouts 2-5 years after planting.”

Nonindustrial Timber Management Plans, after submission, review and approval, are valid for an extended period (decades, not years). Before harvest occurs a Notice of Timber Operations — summarizing the requirements of the NTMP that will be applied to the area being harvested, is required, but not a new harvest document. This limits the amount of potentially useful information, especially when the existing NTMPs are as old as the two that are found in the Campbell Creek Planning Watershed (approved in 1994 and 1996).

Reading THPs/NTMPs can give insight into what the general policies of the landowners in the planning watershed might be. But, as noted above, it is only a projection, if significant vegetative competition doesn't materialize post-harvest herbicide use would not be necessary.

More useful may a database found on the website of the California Department of Pesticide Regulation ([www.cdpr.ca.gov](http://www.cdpr.ca.gov)).

The screenshot shows the website for the California Department of Pesticide Regulation. The header includes the CA.GOV logo, the department name, and navigation links: About DPR, Join E-Lists, A-Z Index, and Contact Us. A search bar is present with a dropdown menu showing 'DPR' and 'California'. Below the header is a navigation menu with links for HOME, PROGRAMS, DATABASES, NEWS/PUBLICATIONS, and QUICK LINKS. The main content area is titled 'Pesticide Use Reporting (PUR)' and includes links for 'Back to Programs & Services' and 'Back to Databases'. The text explains that California's pesticide use reporting program is recognized as the most comprehensive in the world, starting in 1990. It details the legal definition of 'agricultural use' and lists various reporting requirements. A section titled 'The Pesticide Use Report data can be accessed in three different ways:' provides a 'NOTE' about a survey and lists three access methods: 1. California Pesticide Information Portal (CalPIP), 2. Pesticide Use Annual Summary Reports, and 3. Pesticide Use Report Data. Each method includes a brief description and a link to access the data.

The *California Pesticide Information Portal* can be used to request searches for given years by: county, legal description (township, range and section), zip code, site/crop (i.e., “Forest Trees, Forest Lands” and “Forest Plantings”), product (trade name), chemical and other criteria. One drawback is that to get a

report for a planning watershed like the Campbell Creek Planning Watershed would require separate queries for different townships in the watershed.

Below is a sample report. The variables used were: 2016 (most recent year available at time of query), Mendocino County, five sections that are fully within the Pilot Project Planning Watershed, “Forest Trees, Forest Lands (all or unspec)” and “Forest Plantings (reforestation program).”

Query returned the following data:  
There are 5 records returned.

YEAR	DATE	COUNTY NAME	COMTRS	SITE NAME	PRODUCT NAME	POUNDS PRODUCT APPLIED	CHEMICAL NAME	POUNDS CHEMICAL APPLIED	AMOUNT TREATED	UNIT TREATED	AERIAL GROUND INDICATOR
2016	08-JUL-16	MENDOCINO	23M19N16W07	FOREST TREES, FOREST LANDS (ALL OR UNSPEC)	ALLIGARE IMAZAPYR 4 SL	9.3479	IMAZAPYR, ISOPROPYLAMINE SALT	4.9169954	5.5	A	G
2016	11-JUL-16	MENDOCINO	23M19N16W07	FOREST TREES, FOREST LANDS (ALL OR UNSPEC)	ALLIGARE IMAZAPYR 4 SL	9.3479	IMAZAPYR, ISOPROPYLAMINE SALT	4.9169954	5.5	A	G
2016	19-JUL-16	MENDOCINO	23M19N16W09	FOREST TREES, FOREST LANDS (ALL OR UNSPEC)	ALLIGARE IMAZAPYR 4 SL	4.674	IMAZAPYR, ISOPROPYLAMINE SALT	2.458524	3	A	G
2016	13-JUL-16	MENDOCINO	23M19N16W09	FOREST TREES, FOREST LANDS (ALL OR UNSPEC)	ALLIGARE IMAZAPYR 4 SL	9.3479	IMAZAPYR, ISOPROPYLAMINE SALT	4.9169954	7	A	G
2016	07-JUL-16	MENDOCINO	23M19N16W07	FOREST TREES, FOREST LANDS (ALL OR UNSPEC)	ALLIGARE IMAZAPYR 4 SL	14.0219	IMAZAPYR, ISOPROPYLAMINE SALT	7.3755194	8	A	G

See/Save tab-delimited text file [here](#)

Herbicide use was reported on two of the five sections and between those two sections only 29 acres were treated. Because five sections represent 3,200 acres the area treated with herbicides in 2016 was quite small, less than 1%. Adding sections would cover the whole watershed with overlap into the adjacent watersheds. While a planning watershed specific value may not be possible using the California *Pesticide Information Portal*, the database can provide a good estimate for the watershed.

The California Department of Pesticide Regulation website also has reports on annual well sampling. For the years 2014-2017 there were no detections of herbicides from wells near the pilot project area.